

11/18

CASE DB13NP

CERTIFICATE OF MAILING

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Keith R. Lange
Type or print name

Signature

Date

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF
STARLING ET AL.

APPLICATION NO: 09/745,605
FILED: DECEMBER 22, 2000

FOR: NOVEL IMMUNOGLOBULIN SUPERFAMILY MEMBERS OF APEX-
1, APEX-2 AND APEX-3 AND USES THEREOF

Art Unit: 1644

Examiner: Haddad, Maher M.

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Assistant Commissioner for Patents
Washington, D.C. 20231

**DECLARATION OF PRIOR INVENTION IN
THE UNITED STATES TO OVERCOME A REFERENCE UNDER 37 C.F.R. § 1.131**

Sir:

respectively New Zealand and
1. We, Gary C. Starling and Joshua N. Finger, ~~both~~ *52 James Vincent Drive, CLINTON CT 06413* citizens of the United States, residing respectively at ~~11 Gallo Court, Lawrenceville, NJ 08648~~ and 197 North Union Street, Apt. B, Lambertville, NJ 08530 are joint inventors of the above-identified application.

2. At the time of the invention thereof we were working for Bristol-Myers Squibb Company, assignee of the present application. We submit this declaration to establish completion of the invention set forth in this application in the United States at a date prior to December 9, 1999, i.e. the publication date of WO 99/63088 to Baker et al. (hereinafter the '088 publication), which was cited by the Examiner in an Office Action mailed June 5, 2002.

3. From the documents submitted herewith and as set forth hereinbelow, it can be seen that the invention was completed in the United States before December 9, 1999, the publication date of the '088 publication. Completion of the invention prior to December 9, 1999 is shown by conception and actual reduction to practice of the invention as evidenced by the cloning and sequencing of the APEX-1 gene (hereinafter "APEX-1"), which is also referred to in Exhibit A as DCS4.
4. To establish conception and reduction to practice, i.e. completion of the invention at a date prior to December 9, 1999, the following documents are submitted as evidence:
 - a. Bristol-Myers Squibb Notebook No. 42973 assigned and completed prior to December 9, 1999 (Exhibit A), pages 42973-103 through 42973-106, 42973-112 through 42973-114, 42973-127 through 42973-129 and page 42973-158. These pages show the full-length cloning of APEX-1 and set forth the nucleotide and amino acid sequences of APEX-1, which correspond to SEQ ID NOS. 1 and 4, respectively, in the present application. The full length cDNA sequence and amino acid translation of APEX-1 is shown on page 42973-158. These notebook records evidence conception and actual reduction to practice of the complete invention prior to December 9, 1999.
5. The materials submitted herewith establish that the invention as claimed was completed, i.e. conceived and reduced to practice, at a date prior to December 9, 1999, the publication date of the '088 publication.

6. This declaration is submitted in a response to a non-Final Office Action dated June 5, 2002 and is therefore believed to be timely filed.

7. We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information or belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATED: 12/09/02



Gary C. Starling

DATED: _____

Joshua N. Finger

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Assistant Commissioner for Patents
Washington, D.C. 20231

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THE UNITED STATES TO OVERCOME A REFERENCE UNDER 37 C.F.R. § 1.131**

Sir:

1. We, Gary C. Starling and Joshua N. Finger, both citizens of the United States, residing respectively at 11 Gallo Court, Lawrenceville, NJ 08648 and 197 North Union Street, Apt. B, Lambertville, NJ 08530 are joint inventors of the above-identified application.
2. At the time of the invention thereof we were working for Bristol-Myers Squibb Company, assignee of the present application. We submit this declaration to establish completion of the invention set forth in this application in the United States at a date prior to December 9, 1999, i.e. the publication date of WO 99/63088 to Baker et al. (hereinafter the '088 publication), which was cited by the Examiner in an Office Action mailed June 5, 2002.

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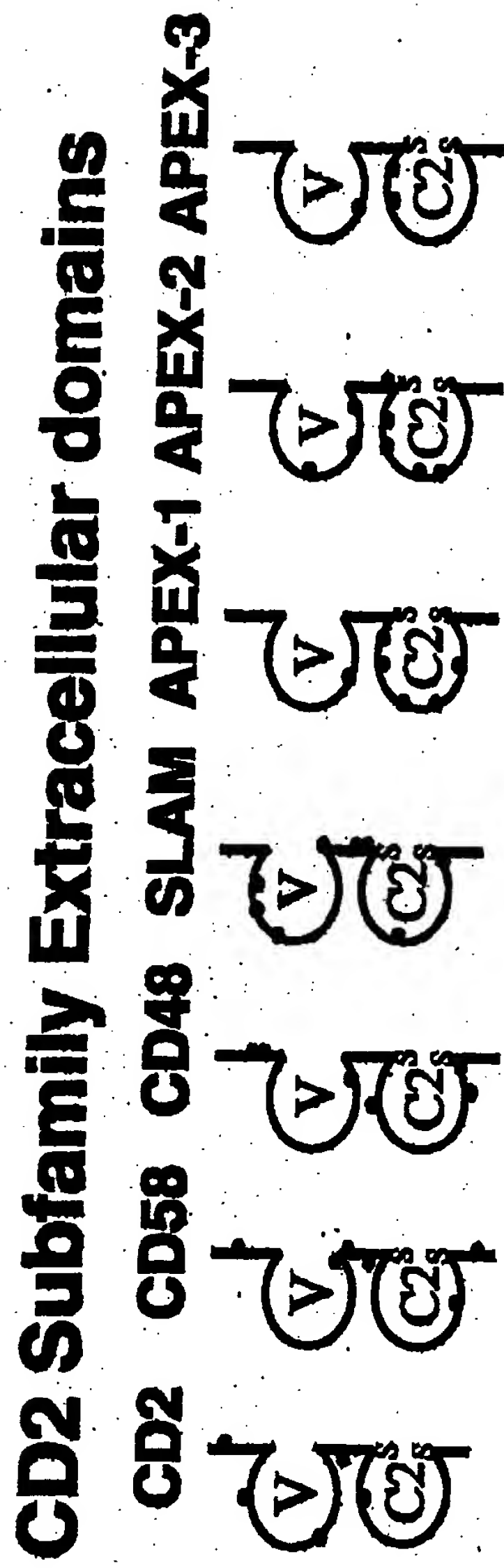
7. We hereby declare that all statements made herein of our own knowledge are true and that all statements made on information or belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

DATED: _____

Gary C. Starling

DATED: 12-17-02


Joshua N. Finger



• = potential N-linked glycosylation sites

FIGURE 1

GGAAGTGGCTTCATTTTCAGTGGCTGACTTCCAGAGAGCAAT 41
 ATGGCTGGTTCCCCAACATGCCTCACCTCATCTATATCCTTTGGCAGCTCACAGGGTCA 101
 M A G S P T C L T L I Y I L W Q L T G S 20
 GCAGCCTCTGGACCCGTGAAAGAGCTGGTCCGTTGGTGGGGCCGTGACTTTCCCC 161
 A A S G P V K E L V G S V G G A V T F P 40
 CTGAAGTCCAAAGTAAAGCAAGTTGACTCTATTGTCTGGACCTTCAACACAACCCCTCTT 221
 L K S K V K Q V D S I V W T F N T T P L 60
 GTCACCATACAGCCAGAAGGGGGCACTATCATAGTGACCCAAAATCGTAATAGGGAGAGA 281
 V T I Q P E G G T I I V T Q N R N R E R 80
 GTAGACTTCCCAGATGGAGGCTACTCCCTGAAGCTCAGCAAATGAAGAAGAATGACTCA 341
 V D F P D G G Y S L K L S K L K K N D S 100
 GGGATCTACTATGTGGGGATATACAGCTCATCACTCCAGCAGCCCTCCACCCAGGAGTAC 401
 G I Y Y V G I Y S S S L Q Q P S T Q E Y 120
 GTGCTGCATGTCTACGAGCACCTGTCAAAGCCTAAAGTCACCATGGGTCTGCAGAGCAAT 461
 V L H V Y E H L S K P K V T M G L Q S N 140
 AAGAATGGCACCTGTGTGACCAATCTGACATGCTGCATGGAACATGGGGAAGAGGATGTG 521
 K N G T C V T N L T C C M E H G E E D V 160
 ATTTATACCTGGAAGGCCCTGGGGCAAGCAGCCAAATGAGTCCCATAATGGGTCCATCCTC 581
 I Y T W K A L G Q A A N E S H N G S I L 180
 CCCATCTCCTGGAGATGGGGAGAAAGTGATATGACCTTCATCTGCGTTGCCAGGAACCCT 641
 P I S W R W G E S D M T F I C V A R N P 200
 GTCAGCAGAACTTCTCAAGCCCCATCCTTGCCAGGAAGCTCTGTGAAGGTGCTGCTGAT 701
 V S R N F S S P I L A R K L C E G A A D 220
 GACCCAGATTCTCCATGGTCCCTGCTGCTCCTGTTGGTGGCCCTCCTGCTCAGTCTC 761
 D P D S S M V L L C L L L V P L L L S L 240
 TTTGTACTGGGGCTATTTCTTTGGTTTCTGAAGAGAGAGAGACAAGAAGAGTACATTGAA 821
F V L G L F L W F L K R E R Q E E Y I E 260
 GAGAAGAAGAGAGTGGACATTTGTGCGGAAACTCCTAACATATGCCCCATTCTGGAGAG 881
 E K K R V D I C R E T P N I C P H S G E 280
 AACACAGAGTACGACACAATCCCTCACACTAATAGAACAATCCTAAAGGAAGATCCAGCA 941
 N T E Y D T I P H T N R T I L K E D P A 300
 AATACGGTTTACTCCACTGTGGAAATACCGAAAAAGATGGAAATCCCCACTCACTGCTC 1001
 N T V Y S T V E I P K K M E N P H S L L 320
 ACGATGCCAGACACACCAAGGCTATTTGCCTATGAGAATGTTATCTAGACAGCAGTGCAC 1061
 T M P D T P R L F A Y E N V I * 335
 TCCCCTAAGTCTCTGCTCAAAAAAACAATTCTCGGCCCAAAGAAAACAATCAGAAGA 1121
 ATCACTGATTTGACTAGAAACATCAAGGAAGAATGAAGAACGTTGACTTTTTTCCAGGA 1181
 TAAATTATCTCTGATGCTTCTTTAGATTTAAGAGTTCGTAATCCATCCACTGCTGAGAA 1241
 ATCTCCTCAAACCCAGAAGGTTAATCACTTCATCCAAAAATGGGATTGTGAATGTCAG 1301
 CAAACCATAAAAAAGTGCTTAGAAGTATTCCTATAGAAATGTAAATGCAAGGTCACACA 1361
 TATTAATGACAGCCTGTTGTATTAATGATGGCTCCAGGTCACTGTCTGGAGTTTCATTCC 1421
 ATCCCAGGGCTTGATGTCAGGATTATACCAAGAGTCTTGCTACCAGGAGGGCAAGAAGA 1481
 CCAAAACAGACAGACAAGTCCAGCAGAAGCAGATGCACCTGACAAAAATGGATGTATTAA 1541
 TTGGCTCTATAAACTATGTGCCAGCACTATGCTGAGCTTACACTAATTGGTCAGACGTG 1601
 CTGTCTGCCCTCATGAAATTGGCTCCAAATGAATGAATCTTTCATGAGCAGTTGTAGC 1661
 AGGCCTGACCACAGATTCCAGAGGGCCAGGTGTGGATCCACAGGACTTGAAGGTCAAAG 1721
 TTCACAAAGATGAAGAATCAGGGTAGCTGACCATGTTTGGCAGATACTATAATGGAGACA 1781
 CAGAAGTGTGCATGGCCCAAGGACAAGGACCTCCAGCCAGGCTTCATTTATGCACTTGTG 1841
 CTGCAAAAGAAAAGTCTAGGTTTTAAGGCTGTGCCAGAACCCATCCCAATAAAGAGACCG 1901
 AGTCTGAAGTCACATTGTAAATCTAGTGTAGGAGACTTGGAGTCAGGCAGTGAAGTGGT 1961
 GGGGCACGGGGGGCAGTGGGTACTTGTAAACCTTTAAAGATGGTTAATTCATTCAATAGA 2021
 TATTTATTAAGAACCTACTATGCGGCCCGCATGGTGGCTCACACCTGTAATCCCAGCAC 2081
 TTTGGGAGGCCAAGGTGGGTGGTCTGAGGTGAGGTTCAAGACCAGCCTGGCCAA 2141
 CATGGTGAACCCCATCTCTACTAAAGATCAAAATTTGCTGAGCGTGGTGGTGTGCACCT 2201

FIGURE 2A

GTATCCCAGCTACTCGAGAGGCCAAGGCATGAGAATCGCTTGAACCTGGAGGTGAGGTTG 2261
CAGTGAGCTGAGATGGCACCCTGCACTCCGGCCTAGGCAACGAGAGCAAACTCCAATA 2321
CAAACAAACAAACAAACACCTGTGCTAGGTGAGTCTGGCACGTAAGATGAACATCCCTAC 2381
CAACACAGAGCTCACCATCTCTTATACTTAAGTGAAAAACATGGGGAAGGGGAAAGGGGA 2441
ATGGCTGCTTTTGATATGTTCCCTGACGCATATCTTGAATGGAGACCTCCCTACCAAGTG 2501
ATGAAAGTGTTGAAAACTTAATAACAAATGCTTGTGGGCAAGAATGGGATTGAGGATT 2561
ATCTTCTCTCAGAAAGGCATTGTGAAGGAATTGAGCCAGATCTCTCTCCCTACTGCAAAA 2621
CCCTATTGTAGTAAAAAAGTCTTCTTTACTATCTTAATAAAACAGATATTGTGAGATTCA 2681
CATAAAAAAAAAAAAAAAAAAAAA

FIGURE 2B

1 CCATCCTAATACGACTCACTATAGGGCTCGAGCGGCCGCCCGGGCAGGTTTCAAGTTCCA
 -----+-----+-----+-----+-----+-----+-----+
 61 CGTTCCTACTGCTAAGAGTCTTAGCTTACAAAAGATATTCTTGTAAGCCAAGTGTGAAG
 -----+-----+-----+-----+-----+-----+-----+
 121 TTAATCACGACAACCAAAGGTTTGCTAACATAGAGGAAGAGCTCTCATCAATAGGGGAAC
 -----+-----+-----+-----+-----+-----+-----+
 181 AGAAAGTCTCAGCGACAAGCTTATGAAAGAATGGCTGTCTCAAGGGCTCCAACACCCGAC
 -----+-----+-----+-----+-----+-----+-----+
 M A V S R A P T P D
 241 TCCGCCTGTCAGAGGATGGTCTGGCTCTTCCACTTGTCTTCTGCCTCGGCTCAGGGAGT
 -----+-----+-----+-----+-----+-----+-----+
 S A C Q R M V W L F P L V F C L G S G S
 301 GAAGTTTCACAGAGCAGCTCAGACCCCCAGCTAATGAATGGCGTTCTAGGAGAGTCTGCA
 -----+-----+-----+-----+-----+-----+-----+
 E V S Q S S S D P Q L M N G V L G E S A
 361 GTTCTTCCTCTAAAGCTTCCTGCAGGGAAGATAGCCAATATCATCATCTGGAATTATGAA
 -----+-----+-----+-----+-----+-----+-----+
 V L P L K L P A G K I A N I I I W N Y E
 421 TGGGAAGCGTCACAAGTCACTGCCCTCGTTATCAACCTAAGTAATCCTGAAAGTCCACAA
 -----+-----+-----+-----+-----+-----+-----+
 W E A S Q V T A L V I N L S N P E S P Q
 481 ATCATGAACACTGATGTAAAGAAGAGACTGAACATCACCCAGTCCTACTCCCTGCAAATC
 -----+-----+-----+-----+-----+-----+-----+
 I M N T D V K K R L N I T Q S Y S L Q I
 541 AGCAACCTTACCATGGCAGACACAGGATCATACTGCGCAGATAACCACAAAGGACTCT
 -----+-----+-----+-----+-----+-----+-----+
 S N L T M A D T G S Y T A Q I T T K D S
 601 GAAGTGATCACCTTCAAATATATTCTGAGGGTCTTGAACGATTGGGTAACTTAGAACT
 -----+-----+-----+-----+-----+-----+-----+
 E V I T F K Y I L R V F E R L G N L E T

FIGURE 3A

661 ACCAACTATACTCTCCTGCTAGAGAATGGGACCTGCCAGATACACCTGGCCTGTGTTTGT
 T N Y T L L L E N G T C Q I H L A C V L
 721 AAGAATCAAAGTCAAAGTGTCTCAGTTGAGTGGCAAGCCACAGGAAACATCTCTTTAGGA
 K N Q S Q T V S V E W Q A T G N I S L G
 781 GGACCAAATGTCACCTATCTTTTGGGACCCGAGGAATTCTGGTGACCAGACTTACGTCTGC
 G P N V T I F W D P R N S G D Q T Y V C
 841 AGAGCCAAGAATGCTGTCAGCAATTTGTCAGTCTCTGTTTCGACCCAGAGTCTCTGCAAA
 R A K N A V S N L S V S V S T Q S L C K
 901 GGGGTTCTAACTAATCCACCCTGGAATGCAGTATGGTTTATGACTACAATTTCAATAATC
 G V L T N P P W N A V W F M T T I S I I
 961 AGTGCAGTCATACTCATCTTTGTGTGCTGGAGCATACTGTTTGAAGAGAAGAGGTTCT
 S A V I L I F V C W S I H V W K R R G S
 1021 CTCCTTTGACTAGCCAACATCCAGAGTCTCCAGAGCACAGATGGCCCAGGCTCTCCA
 L P L T S Q H P E S S Q S T D G P G S P
 1081 GGGAACACTGTGTATGCACAAGTCACTCGTCCAATGCAGGAAATGAAAATCCCAAACCT
 G N T V Y A Q V T R P M Q E M K I P K P
 1141 ATCAAAAATGACTCCATGACAATTTACTCCATAGTTAATCATTCAGAGAGGAAACAGTG
 I K N D S M T I Y S I V N H S R E E T V
 1201 GCTTTAACCGGCTATAACCAACCCATTACCCTGAAGGTAACTTTAATCAACTATAAC
 A L T G Y N Q P I T L K V N T L I N Y N
 1261 TCCTGAAGGAAGAGCACTGCAGTGAAGGAAATTAAACAATGCTGTCACCACAGCTC
 S *

FIGURE 3B

1321 TGGCTTAGATTAATGAAGTCAGCATCTCTGGAGATTGAGCGCTGCCATTGTCATTGTTCA
 -----+-----+-----+-----+-----+-----+
 1381 AACGCTTTCTAGGTGGTATGGTGAGATGCCAGAGGGCTAAGGGCCATTATAGCAGGGTAG
 -----+-----+-----+-----+-----+-----+
 1441 TTTGACTAGGAATACATAAGATAGAAAGCCTAGAATCGTATCATTGAAAGGGACAATGGA
 -----+-----+-----+-----+-----+-----+
 1501 CCTAAGAGAAGTGGAATAAAATTGTGTCACACAAAAAAAAAAAAAAAAAAAAAAAAAG
 -----+-----+-----+-----+-----+-----+
 CTTGT
 1561 ----- 1565

FIGURE 3C

Apex-3 nucleotide with translation

```

1  GAATTCGAATTCGGGACTTTCCAGAAGGACCACAGCTCCTCCCGTGCATCCACTCGGCCT
   -----+-----+-----+-----+-----+-----+-----+
61  GGGAGGTTCTGGATTTTGGCTGTCGAGGGAGTTTGCCTGCCTCTCCAGAGAAAGATGGTC
   -----+-----+-----+-----+-----+-----+-----+
                                   M  V

121  ATGAGGCCCTGTGGAGTCTGCTTCTCTGGGAAGCCCTACTTCCCATTACAGTTACTGGT
   -----+-----+-----+-----+-----+-----+-----+
    M  R  P  L  W  S  L  L  L  W  E  A  L  L  P  I  T  V  T  G

181  GCCCAAGTGCTGAGCAAAGTCGGGGGCTCGGTGCTGCTGGTGGCAGCGCGTCCCCCTGGC
   -----+-----+-----+-----+-----+-----+-----+
    A  Q  V  L  S  K  V  G  G  S  V  L  L  V  A  A  R  P  P  G

241  TTCCAAGTCCGTGAGGCTATCTGGCGATCTCTCTGGCCTTCAGAAGAGCTCCTGGCCACG
   -----+-----+-----+-----+-----+-----+-----+
    F  Q  V  R  E  A  I  W  R  S  L  W  P  S  E  E  L  L  A  T

301  TTTTCCGAGGCTCCCTGGAGACTCTGTACCATTCCCGCTTCCTGGGCCGAGCCCAGCTA
   -----+-----+-----+-----+-----+-----+-----+
    F  F  R  G  S  L  E  T  L  Y  H  S  R  F  L  G  R  A  Q  L

361  CACAGCAACCTCAGCCTGGAGCTCGGGCCGCTGGAGTCTGGAGACAGCGGCAACTTCTCC
   -----+-----+-----+-----+-----+-----+-----+
    H  S  N  L  S  L  E  L  G  P  L  E  S  G  D  S  G  N  F  S

421  GTGTTGATGGTGGACACAAGGGGCCAGCCCTGGACCCAGACCCTCCAGCTCAAGGTGTAC
   -----+-----+-----+-----+-----+-----+-----+
    V  L  M  V  D  T  R  G  Q  P  W  T  Q  T  L  Q  L  K  V  Y

481  GATGCAGTGCCCAGGCCCGTGGTACAAGTGTTTCATTGCTGTAGAAAGGGATGCTCAGCCC
   -----+-----+-----+-----+-----+-----+-----+
    D  A  V  P  R  P  V  V  Q  V  F  I  A  V  E  R  D  A  Q  P

541  TCCAAGACCTGCCAGGTTTTCTTGTCCTGTTGGGCCCCCAACATCAGCGAAATAACCTAT
   -----+-----+-----+-----+-----+-----+-----+
    S  K  T  C  Q  V  F  L  S  C  W  A  P  N  I  S  E  I  T  Y
  
```

FIGURE 4A

601 AGCTGGCGACGGGAGACAACCATGGACTTTGGTATGGAACCACACAGCCTCTTCACAGAC
 S W R R E T T M D F G M E P H S L F T D

661 GGACAGGTGCTGAGCATTTCCTGGGACCAGGAGACAGAGATGTGGCCTATTCCTGCATT
 G Q V L S I S L G P G D R D V A Y S C I

721 GTCTCCAACCCTGTCAGCTGGGACTTGGCCACAGTCACGCCCTGGGATAGCTGTCATCAT
 V S N P V S W D L A T V T P W D S C H H

781 GAGGCAGCACCAGGGAAGGCCTCCTACAAAGATGTGCTGCTGGTGGTGGTGCCTGTCTCG
 E A A P G K A S Y K D V L L V V V P V S

841 CTGCTCCTGATGCTGGTTACTCTTCTCTGCCTGGCACTGGTGCCCCTGCTCAGGGAAA
 L L L M L V T L F S A W H W C P C S G K

901 AAGAAAAAGGATGTCCATGCTGACAGAGTGGGTCCAGAGACAGAGAACCCCTTGTGCAG
 K K K D V H A D R V G P E T E N P L V Q

961 GATCTGCCATAAAGGACAATATGAACTGATGCCTGGACTATCAGTAACCCCACTGCACAG
 D L P *

1021 GCACACGATGCTCTGGGACATAACTGGTGCCTGGAAATCACCATGGTCCTCATATCTCCC
 +

1081 ATGGGAATCCTGTCCTGCCTCGAAGGAGCAGCCTGGGCAGCCATCACACCACGAGGACAG
 +

1141 GAAGCACCAGCACGTTTCACACCTCCCCCTTCCCTCTCCCATCTTCTCATATCCTGGCTC
 +

1201 TTCTCTGGGCAAGATGAGCCAAGCAGAACATTCCATCCAGGACACTGGAAGTTCTCCAGG
 +

FIGURE 4B

1261 ATCCAGATCCATGGGGACATTAATAGTCCAAGGCATTCCCTCCCCCACCCTATTCATAA
-----+-----+-----+-----+-----+-----+
1321 AGTATTAACCAACTGGCACCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
-----+-----+-----+-----+-----+-----+
1381 AAAAAAAAAAAAAAGGGCGGCCGCCCG
-----+-----+-----+-----+-----+-----+ 1408

FIGURE 4C

M	A	G	S	P	T	C	L	T	L	I	Y	I	L	W	Q	L	T	G	S
A	A	S	K	V	V	K	E	L	V	G	S	V	S	F	A	V	T	F	S
L	K	S	T	P	K	Q	V	D	S	I	V	W	I	N	N	T	R	N	S
V	D	I	F	P	E	G	G	D	T	I	T	T	Q	K	R	N	Q	K	I
G	I	Y	H	V	G	I	Y	T	S	K	V	Q	Q	T	S	G	E	S	V
V	N	G	T	C	E	H	L	V	S	T	M	V	E	E	N	G	S	R	N
K	I	T	S	R	A	T	N	G	Q	A	C	N	V	S	H	A	E	I	V
I	S	R	D	F	S	L	G	E	S	M	H	T	E	C	C	N	R	A	P
P	V	D	L	V	M	W	P	I	L	F	C	R	I	P	Q	L	L	S	D
D	K	E	Y	S	T	C	L	R	F	H	E	P	I	C	K	E	H	P	L
T	M	P	D	T	P	R	L	A	F	Y	N	V	I	I	*				

FIGURE 5

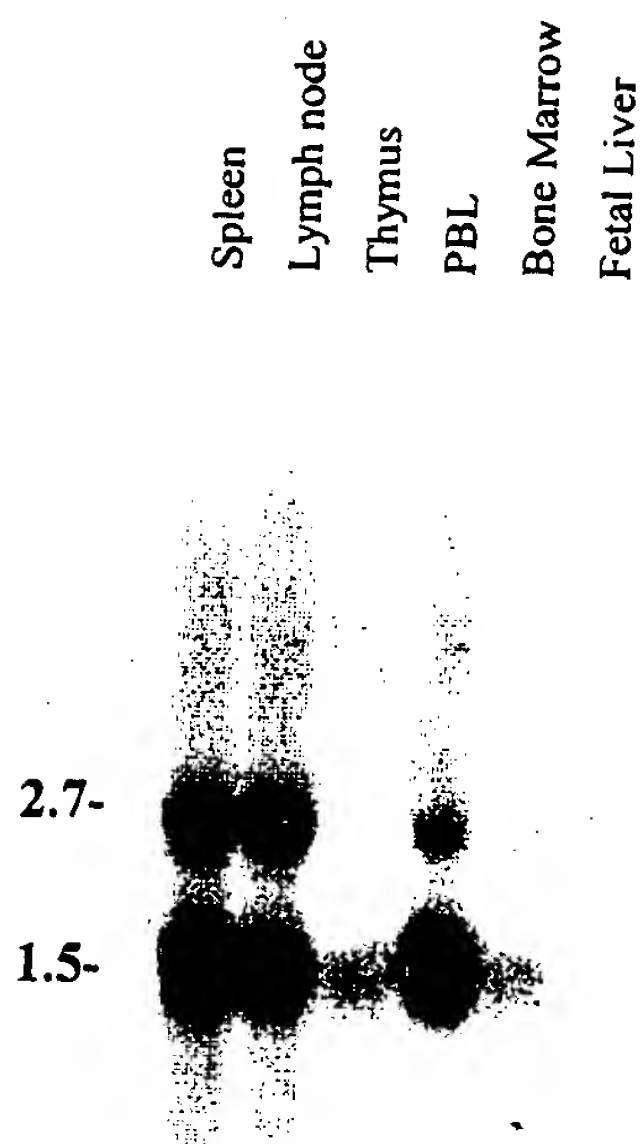
M S K N Q K Q G S M L V S *
 A G L L I Y I G N T P T R E
 V S P S S I H P L T L R E
 S E A N N L L N S I T P E
 R V G P L R A V S S M T
 A S K E T V C T S I Q Q V
 P Q I S M F V I V I H E A
 T S A P A E L F S S P M L
 P S N Q D R K W T A E K T
 D S I I T L N D Q V S I G
 S D I M G G Q P S I S P Y
 A P I N S N S R L L Q K N
 C Q W T Y L Q N C I S P Q
 Q L N D T E T S K F T I P
 R M Y V A T V G G V D K I
 M N E K Q T S D V C G N T
 V G W K I N V Q L W P D L
 W V E R T Y E T T S G S K
 L L A L T T W Y N I S M V
 F G S N K L Q V P H P T N
 P E Q I D L A C P V G I T
 L S V T S L T R W W N Y L
 V A T Q E E G A N K T S I
 F V A S V N N K A R V I N
 C L L Y I G I N V R Y V Y
 L P V S T T S A W G A N N
 G L I L F C L V F S Q H S

FIGURE 6

M	V	M	R	P	L	W	S	L	L	L	W	E	A	L	L	P	I	T	V	T	G
A	Q	V	L	S	K	V	G	S	V	P	L	L	V	L	L	R	F	N	F	R	Q
V	R	E	T	I	W	R	S	R	F	S	H	E	E	Q	L	H	S	D	S	R	S
S	L	G	P	L	Y	H	S	G	S	K	S	R	A	V	L	M	V	V	Q	W	G
E	P	W	V	Q	E	S	Q	A	A	P	T	C	S	L	P	F	S	C	E	V	A
Q	I	A	S	E	T	L	Y	Q	P	W	G	T	A	V	M	D	G	R	P	A	P
F	N	I	F	T	I	D	Q	P	K	L	N	L	V	C	P	D	P	W	V	S	C
H	S	C	I	V	D	G	S	V	L	S	G	D	W	L	V	V	V	V	K	V	S
Y	H	E	A	A	S	T	S	A	Y	S	W	H	N	P	L	S	S	G	P	K	K
H	L	L	M	L	P	R	P	F	L	S	A	E	N	C	L	V	Q	D	L	P	*
L	D	V	H	A	V	R	V	G	G	P	E	T		P	L						

FIGURE 7

A



B

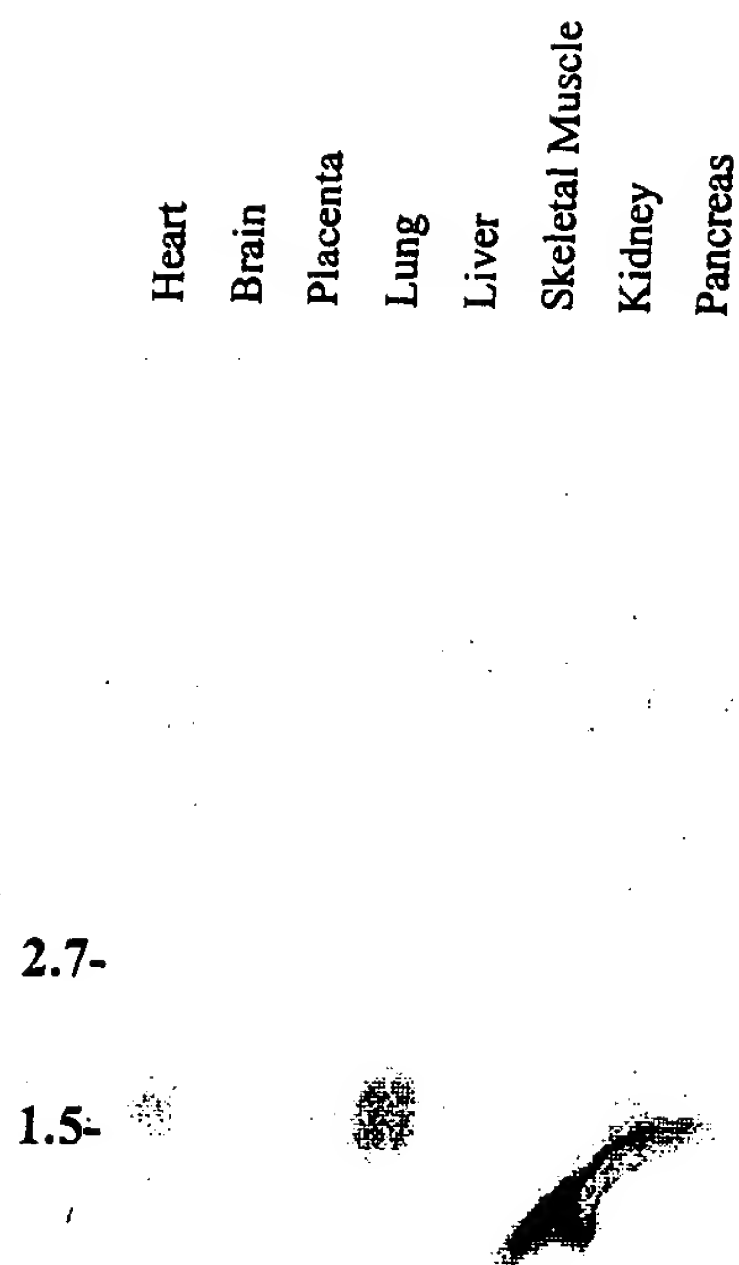


FIGURE 8

Tissue Distribution of Apex1 Expression

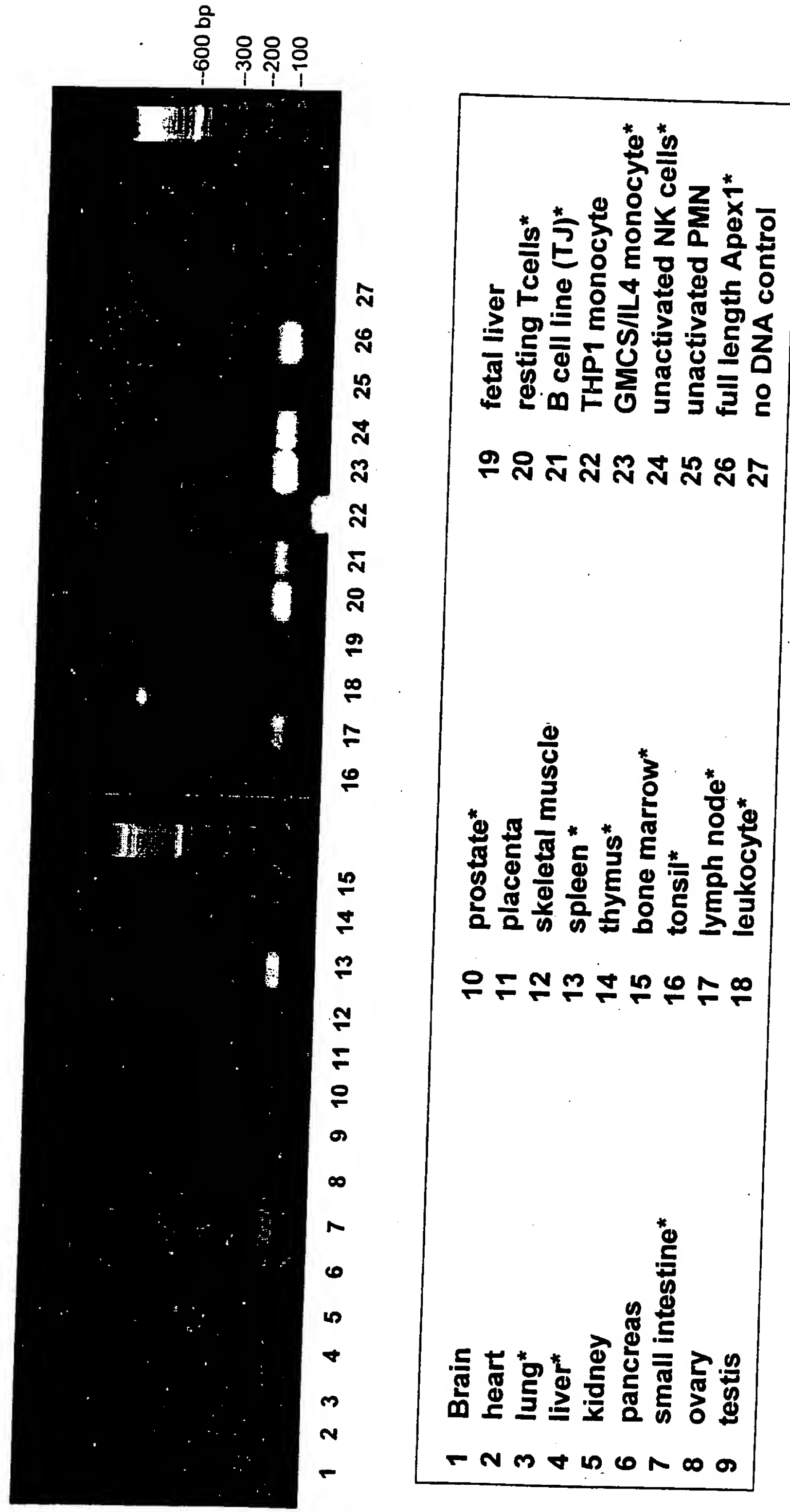


FIGURE 9

Peptides in APEX-1Ig

1 **MAGSPTCLTL** **IYILWQLTGS** **AASGPVKELV** GSVGGAVTFP LKSKVKQVDS
51 IVWTFNTTPL VTIQPEGGTI IVTQNRNRER VDFPDGGYSL KLSKLKKNDS
101 GIYYVGIYSS SLOQPSTQEY VLHVYEHLSK PKVTMGLQSN KNGTCVTNLT
151 CCMEHGEEDV IYTWKALGQA ANESHNGSIL PISWRWGESD MTFICVARNP
201 VSRNFSSPIL ARKLCEGAAD DPDSS HP humanIgG1 H-CH2-CH3

Bold- Predicted signal sequence, which will be cleaved in mature protein HP - junction sequence resulting from the BamH1 enzyme site.

FIGURE 10

Peptides in APEX-2mIg

1 **MAVSRAPTPD** **SACQRMVWLF** **PLVFCLGSGS** EVSQSSSDPQ LMNGVLGESA
51 VLPLKLPAGK IANIIIWNYE WEASQVTALV INLSNPESPQ IMNTDVKKRL
101 NITQSYSLQI SNLTMA DTGS YTAQITTKDS EVITFKYILR VFERLGNLET
151 TNYTLLLENG TCQIHLACVL KNQSQTVSVE WQATGNISLG GPNVTIFWDP
201 RNSGDQTYVC RAKNAVS NLS VSVSTQSLCK GVL TNPPW HP - murine
IgG2a H-Ch2-CH3

Bold- Predicted signal sequence, which will be cleaved in the mature protein HP - junction sequence resulting from the BamH1 enzyme site.

FIGURE 11

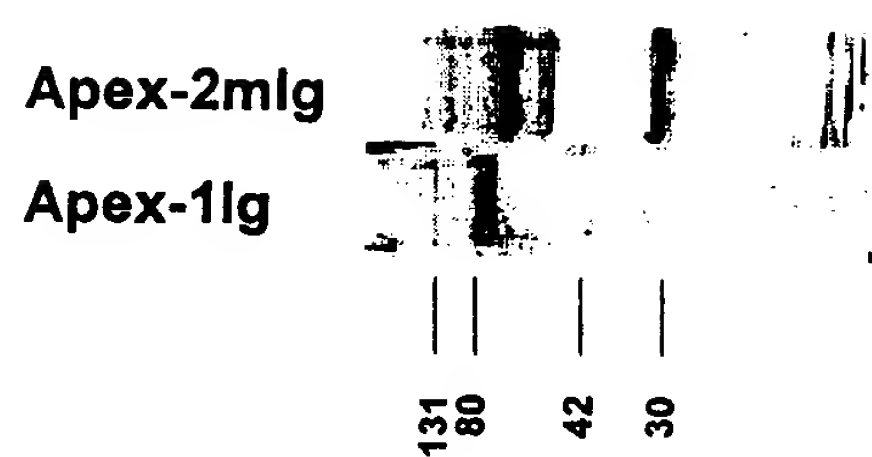


FIGURE 12

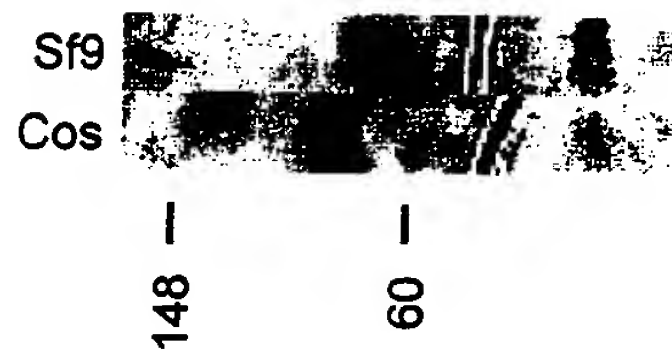
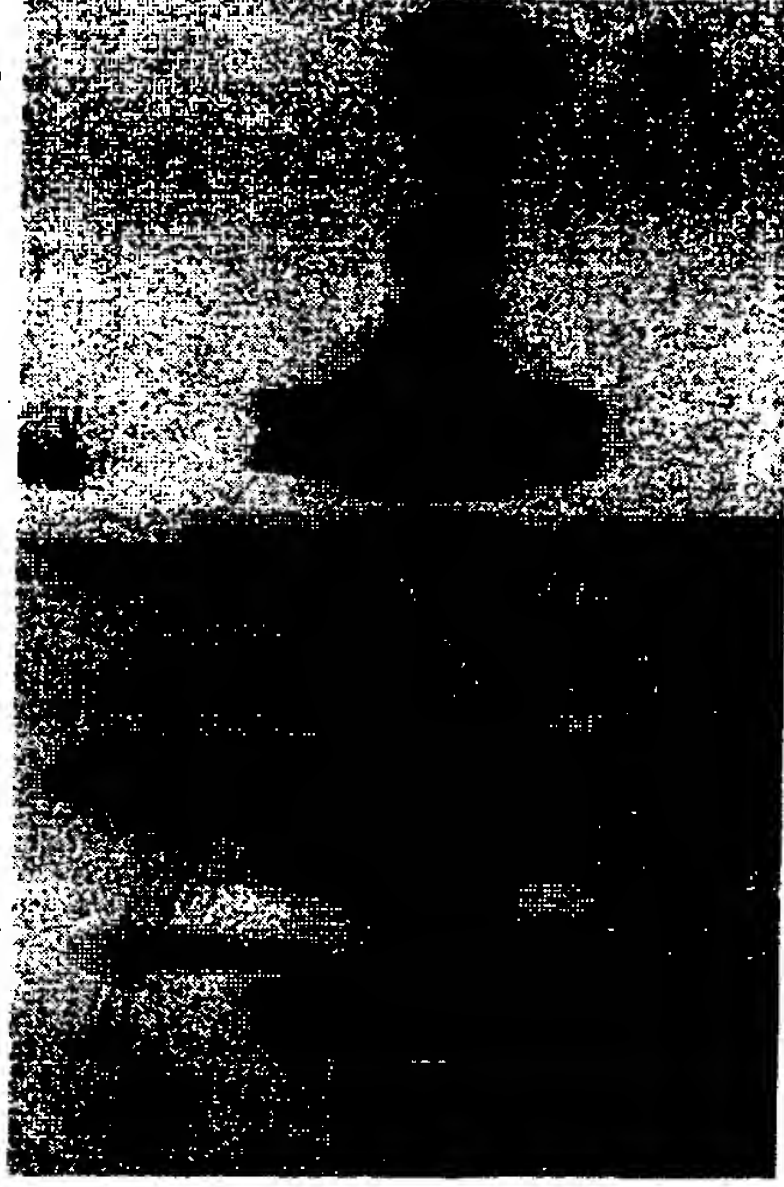


FIGURE 13

Apex1 Antibody Panel

Reduced

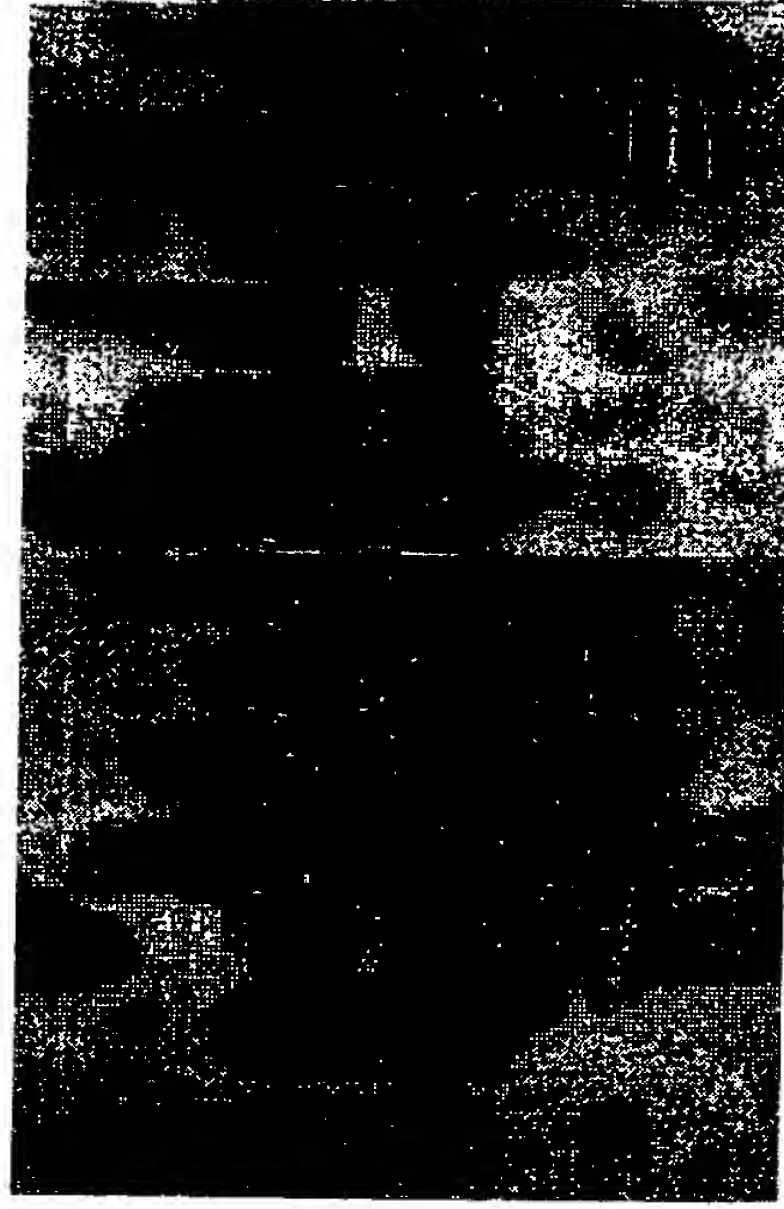
13 30 31 34 35 36 40 66 67 68 71 73



204 kb--
121--
78--
40--
30--

Non reduced

13 30 31 34 35 36 40 66 67 68 69 71 73



204--
121--
78--
40--
30--

FIGURE 14

FLAG-APEX-1

MPMGS**LQPLATLYLLGMLVASCLG****DYKDDDDK**SGPVKELVGSVGGAVTFP
LKSKVKQVDSIVWTFNTTPLVTIQPEGGTIIVTQNRNRERVDFPDGGYSLKLSKLKKNDS
GIYYVGIYSSSLQQPSTQEYVLHVYEHLSKPKVTMGLQSNKNGTCVTNLTCCMEHGEEVDV
IYTWKALGQAANESHNGSILPISWRWGESDMTFICVARNPVSRNFSSPILARKLCEGAAD
DPDSSMVLLCLLLVPLLLSLFVLGLFLWFLKRERQEYIEEKKRVDICRETPNICPHSGE
NTEYDTIPHTNRTILKEDPANTVYSTVEIPKKMENPHSLLTMPDTPRLFAYENVI*

MPMGS**LQPLATLYLLGMLVASCLG** sequence from human CD5 signal peptide,
DYKDDDDK is the FLAG peptide

FIGURE 15

FLAG-APEX-2

MPMGSLQPLATLYLLGMLVASCLG**DYKDDDDK**SEVSQSSSDPQLMNGVLGESA
VLPLKLPAGKIANIIIWNYEWEASQVTALVINLSNPESPQIMNTDVKKRLNITQSYSLOI
SNLTMA DTGSYTAQITTKDSEVITFKYILRVFERLGNLETTNYTLLLENGTCQIHLACVL
KNQSQTVSVEWQATGNISLGPNVTIFWDPRNSGDQTYVCRAKNAVSNLSVSVSTQSLCK
GVLTPPWNNAVWFMTTISIISAVILIFVCWSIHVWKRRGSLPLTSQHPRESSQSTDGPGSP
GNTVYAQVTRPMQEMKIPKPIKNDSMTIYSIVNHSREETVALTGYNQPITLKVNTLINYS*

MPMGSLQPLATLYLLGMLVASCLG sequence from human CD5 signal peptide,
DYKDDDDK is the FLAG peptide

FIGURE 16